REMARKS

The rejection of claims 1-6 under 35 USC §102(b) in view of U.S. Patent No. 5,884,174 (Nagarajan) is again respectfully traversed on the grounds that the Nagarajan patent fails to disclose or suggest an admission control method that employs **two** thresholds to determine whether a new call may be admitted to a cell, as claimed. Instead, of employing both a cluster level threshold and a cell level threshold to establish cell admission, as recited in step (A) of claim 1, the admission control method of Nagarajan admits new calls based on only a single cell level threshold.

In reply, the Examiner argues that the threshold disclosed by Nagarajan "facilitates both cluster and cell level thresholds since it is monitoring the entire network." This interpretation of Nagarajan's teaching of monitoring an entire network as corresponding to the claimed cell and cluster level thresholds is not reasonable. Monitoring of an entire network does not correspond to the claimed application of dual thresholds, involving channel occupancy of a new cell and channel occupancy of a group of cells.

According to the claimed invention, when a mobile user moves from cell to cell, the mobile user is in effect only admitted to the new cell when the number of occupied channels in the cluster is less than the cluster level threshold and the number of occupied channels in the new cell is less than the cell level threshold. This involves two separate threshold determinations, and two different thresholds. To the contrary, col. 5, lines 19-30 of Nagarajan very clearly state that:

> *If the number of occupied channels is greater than the first threshold as determined at block 227, the program advances to block 209, where the new call is admitted. . .If the number of occupied channels is less than the first threshold as determined at block 229. . .the new call is not admitted. . ..*

Nagarajan does not teach admission to a new cell when the number of occupied channels in the cluster is less than a cluster level threshold, and the number of occupied channels is less than a different threshold, namely the cell level threshold.

A cluster is a group of cells, and a cell has a plurality of channels. According to the claimed invention, two determinations must be made when the mobile user moves from cell to cell:

- First, a determination is made as to whether the number of **occupied channels in the cluster of cells** is less than the first, or cluster level, threshold.
- Then, a determination is made as to whether the number of **occupied channels in the new cell** is less than the second or "cell level" threshold.

The Examiner will note that the first threshold involves the number of occupied channels in a **cluster of cells**. The second threshold involves the number of occupied channels in **the new cell**. There are therefore **three** possible situations when non-admittance occurs:

a. when the number of occupied channels in a cluster exceeds the cluster level threshold, even though the number of occupied channels in the new cell does not exceed the cell level threshold,

b. when the number of occupied channels in the cluster is below the threshold but the number of occupied channels in the new cell exceeds the cell level threshold., or

c. when the number of occupied channels in the cluster and the number of occupied channels in the new cell both exceed the threshold.

In any of these cases, admittance is refused. Only if the number of occupied channels in the cluster is below the cluster threshold and the number of occupied channels in the new cell is below the new cell threshold will admittance to the new cell be granted. This is not the case with the system of Nagarajan, which specifically states in col. 5, lines 19-30, that:

> *If the number of occupied channels is greater than the first threshold as determined at block 227, the program advances to block 209, where the new call is admitted. . .If the number of occupied channels is less than the first threshold as determined at block 229. . .the new call is not admitted. . ..*

In the system of Nagarajan, there is only one condition in which admittance to a new cell will occur, and one condition in which admittance will not occur. The condition depends on whether the number of occupied channel **in the new cell** is less than or greater than the

"threshold." **In the system of Nagarajan, there will never be a situation corresponding to situation (a) in which admittance is refused even though the cell level threshold is not exceeded, just because a cluster level threshold is exceeded.** In the claimed invention, admittance is refused in situation (a), despite the fact that the cell level threshold is not exceeded.

It is true that as a mobile user moves from cell-to-cell in the system of Nagarajan, that different channel occupancy limits will apply to each cell, and that calls are admitted only if the new cell is able to allocate a channel to the new call. However, Nagarajan does not consider the problem solved by the present invention, namely reducing the number of hand-offs *between* cells in a given cluster, and therefore does not require a cluster level threshold of the type claimed. Nagarajan is instead directed to the problem of determining whether to admit a new call or not when the number of occupied channels is equal to a predetermined number, which is known as the fractional guard channel policy.

The different natures of the claimed and prior thresholds and cell admittance method is demonstrated by the different manner in which the thresholds of the claimed invention and the threshold of Nagarajan are derived. In particular, the invention determines the double thresholds by selecting the cluster level threshold and the cell level threshold in such a manner that combinations of the cluster and cell level thresholds that can guarantee a predetermined call hand-off dropping probability under any load condition are first found, and then, a particular combination of cluster and cell level thresholds that results in a maximum throughput of the network among the combinations which satisfy a bound on call hand-off dropping probability is found (as recited in claim 4), whereas the Nagarajan patent determines the first threshold by equation $T1=\{C-S\}$, wherein T1 is the first threshold, C is the number of channels in a given cell, and S is the number of channels reserved by the integral guard channel method that rejects all new calls, as explained in col. 4, lines 61-65 of the Nagarajan patent.

The system described in the Nagarajan patent therefore cannot guarantee a predetermined call hand-off dropping probability under any load condition in the manner of the claimed

invention, and thereby guarantee a maximum throughput of the network. A high QoS can be obtained in the system of Nagarajan only when the throughput is further processed, *i.e.*, only when the number of occupied channels equals the first threshold, and the fractional guard channel policy is used in the context of specified design objectives by computing optimized parameter settings to increase the number of calls accepted (see steps 225, 204, and 205 of Fig. 2, and Figs. 5 and 6, of the Nagarajan patent). Such additional processing is not necessary in the system of the claimed invention. Instead, the high QoS of the system of the claimed invention is achieved through the simple use of double thresholds for the new cell and a cluster of cells including the new cell. Nagarajan does not consider such a double threshold.

It appears that the Examiner has confused Nagarajan's teaching of different channel occupancy limits for different cells with the claimed cell and cluster (group of cell) level thresholds. ***The first and second occupancy limits disclosed by Nagarajan are for different cells. Only in the threshold of the new cell (the "second" occupancy limit) is used to determine cell admittance in the Nagarajan system.*** **When admittance to a new cell is sought, the system of Nagarajan does not consider a separate threshold, in addition to the new threshold, for the cluster or group of cells containing the new cell.**

In the claimed invention, a new call is admitted to a cell only if two conditions defined by two different thresholds are met. In Nagarajan, admittance to a new cell occurs whenever the single "threshold" for a particular cell is not exceeded. If the threshold for a cell is not exceeded, admittance occurs irrespective of whether the threshold for a group of cells, or "cluster," is exceeded. **In the system of Nagarajan, only one threshold is applied to any one request for admission to a new cell.** Cluster traffic has no effect on new call admissions, and therefore there is no possible teaching or suggestion in the Nagarajan patent, whether express or implied, for taking into account a second threshold corresponding to the claimed second cluster-level threshold.

Because the Nagarajan patent does not disclose all elements recited in claims 1-6, withdrawal of the rejection under 35 USC §102(b) is respectfully requested.

Having thus overcome the sole rejection made in the Official Action, expedited passage of the application to issue is requested.

Respectfully submitted,

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Date: June 15, 2004

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